

A FEW NEW CADDIS FLIES IN THE COLLECTION OF  
THE CALIFORNIA ACADEMY OF SCIENCES<sup>1</sup>

BY SHAO-WIN LING

*Rhyacophila betteni* Ling, n. sp.

Head brownish with yellowish hairs; vertex yellowish brown, warts prominent; face yellow with golden hairs. Antennæ stout, covered with short brownish hairs, brownish at base, darker at middle and paler toward tip. Maxillary palpi long and slender, grayish black with long black hairs at basal segments. Prothorax light above, with very prominent warts bearing long brownish yellow hairs. Meso- and metathorax dark brown above, pale at sides. Legs all uniformly brownish yellow; spurs slightly darker.

Fore wings narrow, postapical margin very oblique; brownish in color with numerous yellowish spots, especially marked on margins, one big distinct spot near the base of cell  $R_4$ ; pubescence blackish and golden mixed; stigma distinct, dark brown, with a few golden spots; hyaline spot on the cross-vein m-cu distinct. Veins brown with black microsetæ; cell  $R_4$  extends slightly farther back toward base of wing than cell  $R_2$ . Hind wings brownish, lighter at base; stigma distinct, darker in color. Abdomen black above, light yellowish on sides and beneath. Genitalia of male light brown, paler toward tip; clasper very long; the distal segment narrowing down suddenly near the middle, very slender and finger-shaped toward tip.

Length of fore wing, male 13.5 mm., of hind wings 12 mm.

Type No. 4620, Calif. Acad. Sci., Ent. Type locality Mt. Tamalpais, Marin Co., California, February 24, 1907 (F. X. Williams).

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<sup>1</sup> In 1932 the caddis flies in the collection of the California Academy of Sciences were sent to Prof. James G. Needham of Cornell University for determination. These were turned over by Prof. Needham to Mr. Shao-win Ling, a student at Cornell University, for study and a report on them has been received by the Academy. This report was too extended for immediate publication in the Proceedings of the Academy and it has been thought best to publish separately in the Pan-Pacific Entomologist the descriptions of those species the types of which are now in the collection of the Academy.

Unfortunately the figures of details of these new species are made up in plates with unrelated material and will have to be published later in connection with the general report on the Academy material.—Editor.

*Rhyacophila californica* Ling, n. sp.

General appearance similar to *R. bipartita*. Head dark brown; compound eyes black, ocelli white; antennæ grayish brown, paler at base and darker toward tip, slightly annulated with dark gray at middle of each segment. Vertex with prominent warts, hairs either black or yellowish; face brown with dark-brown hairs; maxillary palpi dark, labial palpi paler, basal segment yellowish. Prothorax light yellowish gray with brownish hairs; meso- and metathorax dark brown above, light brown on sides and beneath. Legs yellowish brown; lighter at base, darker toward tip. Spurs normal, grayish black. Fore wings quite slender, postapical margin oblique; uniformly grayish brown in color with yellowish and dark spots especially along the margin; stigma not distinct. Hind wing hyaline, paler near base; stigma distinct. Abdomen black above and grayish brown beneath. Genitalia grayish brown; dorsal piece triangular when viewed from side, with a small distal piece; clasper moderate in size, first segment small at base and wider at tip, second almost straight and truncate at tip; penis slender with two pairs of spines at tip, one pair pointing straight backward and the other pointing downward and forward on each side.

Length of wings of male: fore wing 12 mm., hind wing 10 mm.

Type No. 4621, Calif. Acad. Sci., Ent. Type locality Lagunitas, Marin Co., California, Feb. 23, 1927 (H. H. Keifer).

*Rhyacophila complicata* Ling, n. sp.

Head brownish; vertex slightly paler with silvery and brownish hairs; ocelli light brown; antennæ dark brown, slightly annulated with black at end of each segment; face brownish; maxillary palpi slender, brownish, with long brownish hairs at basal segments; labial palpi brownish, slightly club-shaped at end. Thorax dark brown above, lighter at sides and beneath; legs pale brown, tarsi darker, coxæ silvery and brownish in color. Fore wing pale brown without yellowish spots or markings; stigma not distinct; veins pale; cell  $R_4$  reaching slightly farther backward to the base of wing than cell  $R_2$ ; cell  $M_3$  slightly longer than pedicel. Hind wing paler, stigma pale. Genitalia brownish, complicated, distal joint of clasper bifid at tip.

Length of wings of male: fore wing 10 mm., hind wing 9 mm.

Type No. 4622, Calif. Acad. Sci., Ent. Type locality Oregon, October 12.

*Rhyacophila doddsi* Ling, n. sp.

Small in size and pale in color. Head black with dark yellowish hairs; antennæ slender, brownish in color; face black; maxillary and labial palpi yellowish. Prothorax brownish, warts and hairs pale golden. Meso- and metathorax dark brown; with brownish hairs; legs brownish, coxæ darkest, tarsi lightest. Spurs brown. Fore wings moderately broad; uniformly light brownish in color without spots or markings; stigma distinct; veins pale; cell  $R_2$  and cell  $R_4$  reaching back about to the same level; cell  $M_3$  about as long as pedicel. Hind wings pale; stigma distinct; veins pale. Genitalia prominent; dorsal piece small, distinctly bifid; basal segment of clasper long and thick, distal segment about one-third as large, with a sharp incision at anterior margin; penis simple and slender; accessory appendage fused at middle to form a single piece, club-shaped and provided with dense short hairs at end.

Type No. 4623, Calif. Acad. Sci., Ent. Type locality Yellowstone Park, July 21; also from Colorado (G. S. Dodds).

*Rhyacophila novarotunda* Ling, n. sp.

Length of wings of male: fore wing 9 mm., hind wing 7.5 mm.

General appearance very similar to *R. rotunda*. Head black, with golden hairs. Antennæ slender, black in color, slightly annulated with pale at base of each segment, especially those near the base. Maxillary and labial palpi black. Thorax black, provided with golden and brownish hairs. Coxæ dark, with short golden hairs; femora black at base, lighter toward tip; tarsi light, darker at tip of each joint; spurs normal, grayish yellow. Wings brownish with numerous yellowish dots, especially distinct near margins; fore wings with cell  $R_2$  slightly farther back than cell  $R_4$ ; cell  $M_3$  slightly shorter than pedicel. Hind wings pale at anal area; stigma distinct. Abdomen black. The genitalia differ from those of *R. rotunda* in that the dorsal piece is more slender and longer, that the distal segment of the clasper is more distinctly broadened and concave at tip, and that the accessory appendages of the penis are broader toward tip and provided with a dark spot.

Length of wings of male: fore wing 10 mm., hind wing 9 mm.

Type No. 4624, Calif. Acad. Sci., Ent. Type locality Homestead Inn, Mt. Hood, Oregon, July 6, 1927 (Van Dyke). Another specimen is from Mt. Adams, Washington, July 30, 1925 (Van Dyke).

*Rhyacophila oregonensis* Ling, n. sp.

Pale yellowish in color. Head light brown; vertex brown, warts and hairs yellowish; cheeks brownish; face pale; maxillary and labial palpi light yellowish; antennæ slender, brownish, annulated with pale yellow between joints. Compound eyes black; ocelli brownish. Prothorax light brown, with very distinct warts. Meso- and metathorax brownish above, light brown on sides and beneath; legs light brown at base, lighter toward tip, with a dark ring at each tarsal joint; spurs brownish, inner spur of hind tibia slightly shorter than the outer one and bifid at tip. Fore wings broad, light brown in color and provided with numerous irregular brownish spots, especially along the margins; stigma pale without any markings; veins brownish; cell  $R_4$  reaching back a little farther than cell  $R_2$ ; cell  $M_3$  longer than pedicel; median cell (1st  $M_2$ ) present though the crossvein may be very faint. Hind wings with tips colored like the fore wings, anal area pale; stigma lighter in color than the wings; posterior margin incised. Abdomen light brown and paler on sides and beneath. Genitalia pale; dorsal piece greatly reduced in size, bifid at tip and curved downward like a hook when viewed from side; penis and its sheath greatly modified.

Length of wings of male: fore wings 12.5 mm., hind wing 11 mm.

Type No. 4625, Calif. Acad. Sci., Ent. Type locality Corvallis, Oregon. Another male specimen was collected at Beaver Creek, Medicine Lake, Canada, September 4.

*Glossosoma oregonense* Ling, n. sp.

General appearance similar to *G. alascense*. Head blackish brown; vertex dark, warts with white hairs. Antennæ shorter than wing, brownish in color, basal segment thick and dark brown; face brownish with whitish scale hairs; maxillary palpi brownish, labial palpi very small. Thorax dark brown; legs uniformly yellowish; spurs long and slender, dark brown in color. Wings light brownish, thickly covered with brownish and silvery short hairs; venation like other species. Abdomen blackish above, grayish on sides and below.

Length of wings of male: fore wings 7.5 mm., hind wings 6.5 mm.

Type No. 4626, Calif. Acad. Sci., Ent. Type locality Crater Lake, Oregon (Van Dyke), July 18, 1922. Others are from Steen Mts., Oregon, June 25, 1922 (E. C. Van Dyke); Corvallis, Oregon, June 11, 1925 (E. P. Van Duzee).



*Philopotamus novusamericanus* Ling, n. sp.

General appearance similar to *P. americanus*. Head black; warts slightly lighter, hairs golden. Antennæ brownish, slightly darker at base of each joint. Palpi dark brown, second segment thick, third segment one and a half times as long as the fourth, fifth almost as long as third and fourth combined. Legs brownish, spurs with a black line on edge. Wings brownish, with many irregular yellowish spots; venation as usual; cell  $R_2$  of hind wing absent. Abdomen grayish. Genitalia brownish; dorsal piece small; superior appendage longer than wide when fully extended; clasper long, basal segment very thick, second small, tapering at end and only half as long as the first.

Length of wings of male: fore wing 10 mm., hind wing 8.5 mm.

Type No. 4627, Calif. Acad. Sci., Ent. Type locality Lagunitas, Marin Co., California, March 23, 1927 (H. H. Keifer).

*Philopotamus oregonensis* Ling, n. sp.

A small species, beautifully colored with yellow. Head black, vertex with prominent brownish warts; hairs white, slightly golden. Antennæ stout, brownish, slightly annulated with black. Eyes black with golden markings. Palpi brownish. Thorax brown; legs paler and grayish toward tip; spurs stout and longer. Fore wing broad, brownish, with numerous yellowish and whitish irregular spots, especially on the costal margin; pubescence dense but short. Veins brown, venation like that of *P. æqualis*. Hind wing broad, cell  $R_2$  present. Genitalia: dorsal piece represented by two slender projections; superior appendage long, broad at middle and pointed at both ends; clasper with the basal and distal segments subequal in length, distal joint rounded at tip.

Wings of male: fore wing 8 mm., hind wing 7 mm.

Type No. 4628, Calif. Acad. Sci., Ent. Type locality Alsea Mount, Oregon, June 2, 1929 (H. A. Scullen).

*Dolophilus arizonensis* Ling, n. sp.

Head brownish, more or less flattened. Eyes normal, ocelli small. Antennæ stout, brownish, slightly annulated with yellow at tip of each segment. Palpi brownish, first and second segments subequal in size, third segment twice as long as fourth, fifth slightly longer than third. Legs pale, spurs 2-4-4. Wings pale brown; venation as usual. Abdomen brownish. Genitalia pale yellowish; dorsal piece broad at base, narrow at middle, and club-shaped at tip; superior appendage small, almost triangular in shape, clasper short but stout, yellowish in color, with black markings at end of each segment; basal segment thick, slightly longer

than broad, distal joints shorter than the first, tapering gradually toward tip.

Length of wings of male: fore wing 8.5 mm., hind wing 5.5 mm.

Type No. 4629, Calif. Acad. Sci., Ent. Type locality Arizona.

*Dolophilus cruzensis* Ling, n. sp.

Similar to *D. arizonensis* in general form and coloration of head, antennæ, palpi and wings, but it can easily be distinguished by the characters of genitalia. Genitalia dull brown in color; dorsal piece broad at base and spear-shaped at tip; superior appendage slender, almost as long as the dorsal piece; claspers short. When fully extended the basal segment is only slightly shorter than the second. (In dried specimens the basal segment seems to be much shorter.) The second segment twice as long as broad and only slightly narrower toward tip.

Length of wings of male: fore wing 6 mm., hind wing 5 mm.

Type No. 4630, Calif. Acad. Sci., Ent. Type locality Felton, St. Cruz County, California, May 15-19, 1907 (J. C. Bradley), many specimens.

*Chimarrha idahoensis* Ling, n. sp.

General appearance like that of *C. aterrima*. Palpi long; fifth segment slightly longer than fourth, third almost as long as second which is about as long as fourth and fifth together, basal segment very short. Wings brownish, venation as usual. The ventral process on the last abdominal segment with only the rudiment left (hardly visible). Clasper short and broad, only slightly incised on its posterior margin.

Length of wings of male: fore wing 6 mm., hind wing 5.5 mm.

Type No. 4631, Calif. Acad. Sci., Ent. Type locality Lewiston, Idaho, July 21, 1925 (C. L. Fox), one male.

*Arctopsyche brevipennis* Ling, n. sp.

General appearance similar to *A. grandis*. Head brownish; vertex with yellowish hairs; face brownish, almost bare. Eyes large, black, and with fine yellowish pubescence. Antennæ slender, brownish, annulated with black at end of each segment. Prothorax with yellowish gray hairs; meso- and metathorax dark brown with golden hairs at the middle (the depressed area). Fore wings of male pale yellowish, with irregular black spots. Venation same as *A. grandis*. Legs yellowish brown. Abdomen dark above and brown on sides. Genitalia much simpler than in

the other species; dorsal piece narrow and long and slightly incised at tip; claspers long and slender, pointed at end.

Length of wings of male: fore wing 15.5 mm., hind wing 14 mm.

Type No. 4632, Calif. Acad. Sci., Ent. Type locality Bubbs Creek, Kings River Canyon, California, July 8, 1912, altitude 9,700 ft. (E. C. Van Dyke); also from Rea Lake, Fresno Co., California, July 20, 1910, altitude 10,500 ft. (E. C. Van Dyke).

*Arctopsyche californica* Ling, n. sp.

General appearance similar to *A. grandis*. Head brownish; vertex covered with long dense golden hairs; face brown with dark hairs. Antennæ brownish, annulate with black and yellow at tips of joints. Palpi long, brownish at base, paler toward tip; fourth segment longer than third, fifth almost as long as the other four together. Prothorax with long black hairs at the dorsal warts; meso- and metathorax dark brown, paler at median line. Legs yellowish brown, darker toward tip; spurs long, inner apical spur of front leg longer than the outer; outer apical and subapical spurs of middle leg longer than the inner. Abdomen fuscous. Genitalia brownish; very complicated. Fore wings broad, brownish with numerous black and yellowish irregular spots, a conspicuous black band running along the anastomosis; venation similar to that of *A. grandis*.

Length of wings of male: fore wing 12.5 mm., hind wing 12 mm.

Type No. 4633, Calif. Acad. Sci., Ent. Type locality McCloud River, Shasta Co., California, July 1, 1907 (F. X. Williams).

*Arctopsyche oregonensis* Ling, n. sp.

Form much smaller than the other species. Head black, vertex black with five small warts in front bearing yellowish hairs, and one pair of much larger ones at the hind margin, bearing black hairs with yellowish tips. Palpi brownish. Prothorax brownish. Meso- and metathorax black. Fore wings slender and transparent, with many yellowish and black spots irregularly scattered. Hind wings broad, hyaline, and not so transparent as the fore wing. Genitalia with the dorsal piece bifid, serrated above when viewed from the side; claspers short with a finger-like projection at the lower margin.

Length of wings of male: fore wing 11 mm., hind wing 10 mm.

Type No. 4634, Calif. Acad. Sci., Ent. Type locality Wal-lowa Lake, Oregon, July 27, 1929 (H. A. Scullen).

*Diplectrona oaklandensis* Ling, n. sp.

General appearance similar to *D. californica* Banks but much paler in color. Genitalia brownish; dorsal piece longer and more deeply notched at tip than in *D. californica*; claspers slender, second segment very small, almost rounded; penis spoon-shaped, bifid, widened and with a small spine-like process at tip; the accessory appendages two in number, black and simple.

Length of wing: fore wing 7.5 mm., hind wing 6.5 mm.

Type No. 4635, Calif. Acad. Sci., Ent. Type locality Oakland, California, April 17, 1915 (E. P. Van Duzee), one male.

*Hydropsychodes arizonensis* Ling, n. sp.

Head dark brown; vertex and face dark with black and white hair. Antennæ brownish, annulate with yellow, darker toward tip, somewhat serrate in appearance. Palpi dark. Thorax brownish; legs pale; spurs 2-4-4. Wings pale, with very short and fine white and black hairs; venation as usual. Genitalia pale; tip of dorsal piece with a finger-like projection on either side, directed inward, pointing toward each other; basal segment of clasper stout, second very small, almost triangular in shape; penis almost like that of *H. gracilis* except that the lobes are not so broad.

Length of wings: fore wing 7 mm., hind wing 6 mm.

Type No. 4636, Calif. Acad. Sci., Ent. Type locality Chiricahua Mts., Arizona, August 25, 1927 (J. A. Kusche).

*Astenophylax needhami* Ling, n. sp.

Head brownish; vertex black at the center (almost like a black spot), two pairs of warts, the smaller pair present between the ocelli and base of antennæ, the larger pair lying transversely along the hind margin of vertex, hairs long and brownish; front light brownish with hairs of the same color. Antennæ shorter than wing, basal segment pale, dark at middle and paler again toward tip. Palpi light brownish. Prothorax light brown, warts pale. Mesothorax dark brown above, with oval whitish area at scutellum. Legs light brown, ventral surface of tibiae and tarsi armed with two rows of stout spines, last tarsal joint of the hind leg with two pairs of spines; spurs 1-3-4. Fore wings broad, light brown, scantily pubescent, stigma not well defined, veins brown. Hind wings paler, veins pale, a cross-vein present between veins Sc. and  $R_1$  near margin. Genitalia dark, dorsal piece with the edges turned upward forming a big depression between them; clasper broad at base, small and almost pointed at tip; penis simple with a pair of thread-like appendages.

Length of fore wing: 25 mm.



Type No. 4637, Calif. Acad. Sci., Ent. Type locality "Sutley", California (Mrs. S. T. Yeams, presented by P. R. Needham). This species is named in honor of Dr. P. R. Needham.

*Colpotaulius tehamia* Ling, n. sp.

General appearance similar to *Anabolina spinosa* but they can easily be separated by the fact that the tibiae of the front legs of this species have very few spines and the first tarsal segment is only half as long as the second. The dorsal piece of the male genitalia is larger than that of *A. spinosa*.

Length of fore wing: 11 mm.

Type No. 4638, Calif. Acad. Sci., Ent. Type locality Tehama Co., California, Oct. 30, 1920 (E. C. Van Dyke).

*Anabolia oslari* Ling, n. sp.

Head dark brown, almost triangular in shape when viewed from side; vertex with very few long hairs. Antennae brownish, basal segment about as long as the next three segments together. Thorax and abdomen brownish. Legs brownish, stout, with a black spot on the inner surface of trochanter of each leg. Last tarsal segment of the hind leg with one pair of black spines. Genitalia dark brown; dorsal piece well chitinized and black in color at tip; clasper smaller than superior appendages; penis simple; accessory appendages simple.

Length of fore wing: 12 mm.

Type No. 4639, Calif. Acad. Sci., Ent. Type locality Glenwood Springs, Colorado (Oslar).

*Hesperophylax minutus* Ling, n. sp.

This is a very small species. Head hairy; vertex dark brown covered with short white hairs, with only one pair of warts (posterior); antennae dark brown, about as long as wing; basal segment with a longitudinal yellowish stripe (without any strong hairs in the stripe) on the ventral surface; face deep brown, a pair of transverse white stripes present below the base of antennae. Prothorax densely covered with long pale yellowish hairs, mostly directed backward, meso- and metathorax black above and brownish at sides and below. Legs stout, brownish. Wings resemble those of *H. designatus*. Genitalia dark, almost identical with those of *H. designatus*.

Length of wings of male: fore wing 9 mm., hind wing 8.5 mm.

Type No. 4640, Calif. Acad. Sci., Ent. Type locality Steen Mts., Harney Co., Oregon, June 25, 1922 (E. C. Van Dyke).

*Chilostigma atlinensis* Ling, n. sp.

Head black; vertex with only the usual dorsal posterior warts; antennæ shorter than wings; basal segment dark, the others reddish brown with lighter area at tip of each joint. Face and palpi dark brown. Prothorax black at sides, dorsal warts distinct, reddish and bearing numerous whitish hairs. Mesothorax light brownish above (excepting the anterior median portion) and dark at sides. Metathorax dark brown. Legs slender and long; coxæ black; femora, tibiæ, and tarsi pale. Spurs 1-2-2. Last tarsal segment without any spine. Fore wing smoky, stigma distinct, veins pale, brownish marking faint.

Length of fore wing: 16 mm.

Type No. 4641, Calif. Acad. Sci., Ent. Type locality Atlin, British Columbia, September 5, 1929 (George Swarth).

*Clistoronia bifida* Ling, n. sp.

General appearance very similar to *C. vastus*. Head brownish; vertex with a tuft of white hairs between the bases of antennæ; face and palpi brownish, clothed with light brown hairs. Dorsal warts of prothorax densely clothed with strong, whitish, and black setæ. Meso- and metathorax brown. Wings very similar to those of *C. vastus*; venation as usual. Legs light brown; inner surface of front femora ciliated; tibiæ with dark marking at middle and tip; tarsi darkened at tip of each segment; last tarsal segment of hind leg with one pair of black spines. Spurs 1-3-4. Genitalia very characteristic, dorsal piece distinctly bifid at tip.

Length of fore wing: 19 mm.

Type No. 4642, Calif. Acad. Sci., Ent. Type locality Corvallis, Oregon (C. A. Starder).

*Neophylax pulchellus* Ling, n. sp.

Head deep brown; vertex with tuft of black and white hairs between the bases of antennæ; face and palpi brown. Thorax brown. Legs brownish; spurs: male, 1-3-3, female, 1-4-4; inner apical spur of the hind legs of the male greatly modified, somewhat leaf-like. Fore wings brownish, beautifully marked with deep brown and yellowish spots, clothed with yellowish and whitish hairs, especially toward apex; stigma very distinct, densely pubescent; veins deep brown; vein  $R_1$  strongly arched near tip; discal cell four times as long as its pedicel; post-apical margin strongly incised. Hind wing paler; venation somewhat reduced in the male. Genitalia hard to make out.

Length of wings: male, fore wings 13 mm., hind wings 11 mm.; female, fore wing 17 mm., hind wing 15 mm.

Type No. 4643, Calif. Acad. Sci., Ent. Type locality Oakland, California, April 12, 1908 (E. C. Van Dyke).

*Oligoplectrum arizonicum* Ling, n. sp.

Head dark brownish. Antennæ about as long as wing, basal segment about as long as the head. Maxillary palpi 3-segmented; basal segment about twice as long as broad, second segment twice as long as the first and subequal in length with the third segment. Thorax dark brown; legs brownish, spurs 2-2-2. Wings brownish; fore wing densely covered with hairs.

Length of wings: fore wing 5 mm., hind wing 3.5 mm.

Type No. 4644, Calif. Acad. Sci., Ent. Type locality Arizona, August 18.

*Oligoplectrum californicum* Ling, n. sp.

Head brownish, vertex with two pairs of warts lying transversely between the eyes, front pair just behind the base of antennæ. Antennæ short, stout, brownish in color; basal segment slightly shorter than head. Maxillary palpi 3-segmented; first segment very short, second three times as long as the third which is about twice as long as broad. Thorax brownish; legs paler; spurs 2-2-2. Wings brownish, densely covered with hairs.

Length of wings: fore wing 9 mm., hind wing 6.5 mm.

Type No. 4645, Calif. Acad. Sci., Ent. Type locality Yosemite Valley, California, July 5, 1927 (E. C. Van Dyke).

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HIBERNATION OF THE CERAMBYCID PLECTRURA  
*SPINICAUDA* MANN.

In a previous number (Pan-Pac. Ent., 12:119) Mr. E. G. Linsley recorded that *Ipochus fasciatus* Lec. hibernates in the adult stage in Southern California. It may be of interest to note that the writer has found adults of another flightless Cerambycid, *Plectrura spinicauda* Mann., hibernating on the campus of British Columbia at Vancouver. The beetles were fairly common throughout the winter (November to March) in crevices of the rough bark of living *Thuja plicata*, and also under the loosened bark of dead or injured *Alnus rubra*.—Hugh B. Leech, Univ. of Calif., Berkeley.